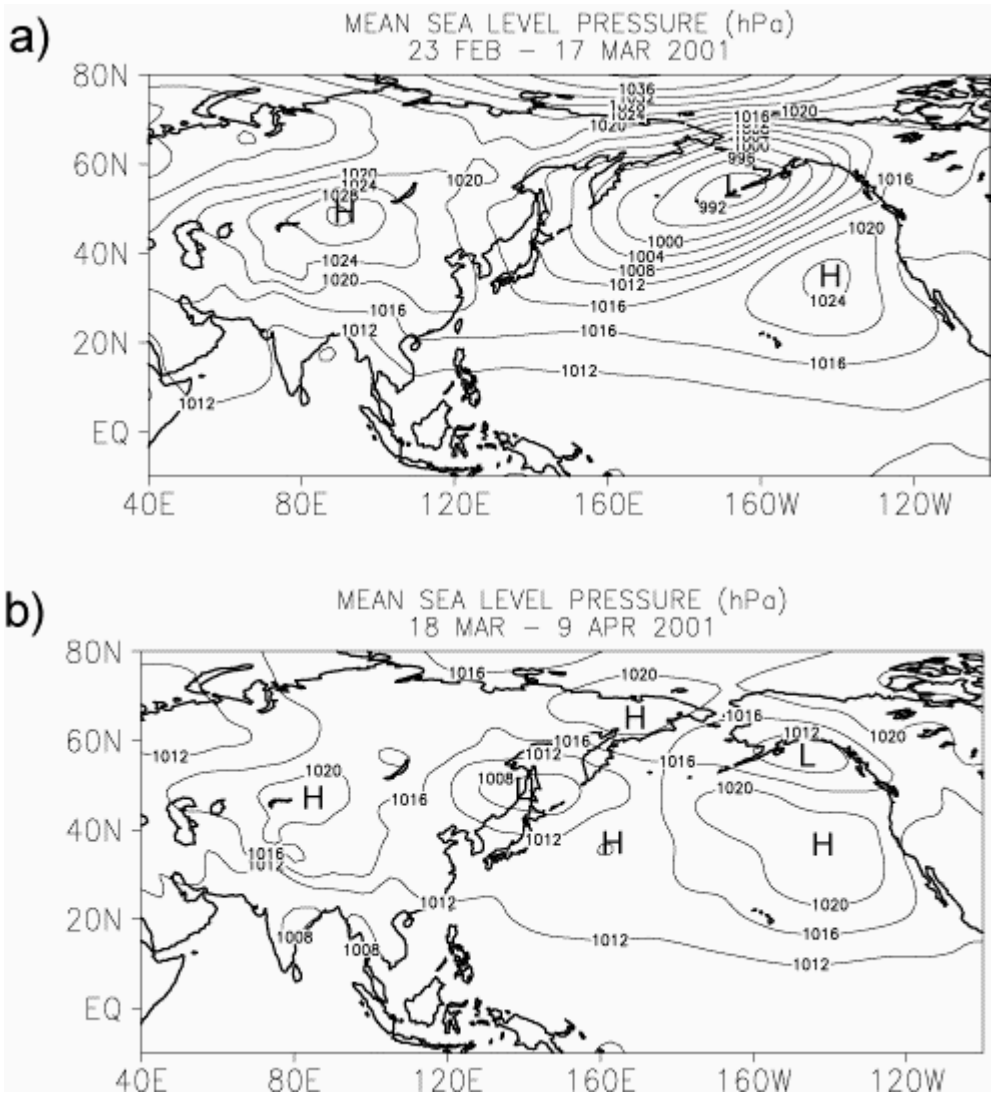

Figure 1. Mean sea level pressure (hPa) for the two halves of the TRACE-P period, a) 23 February – 17 March 2001 and b) 18 March – 9 April 2001.

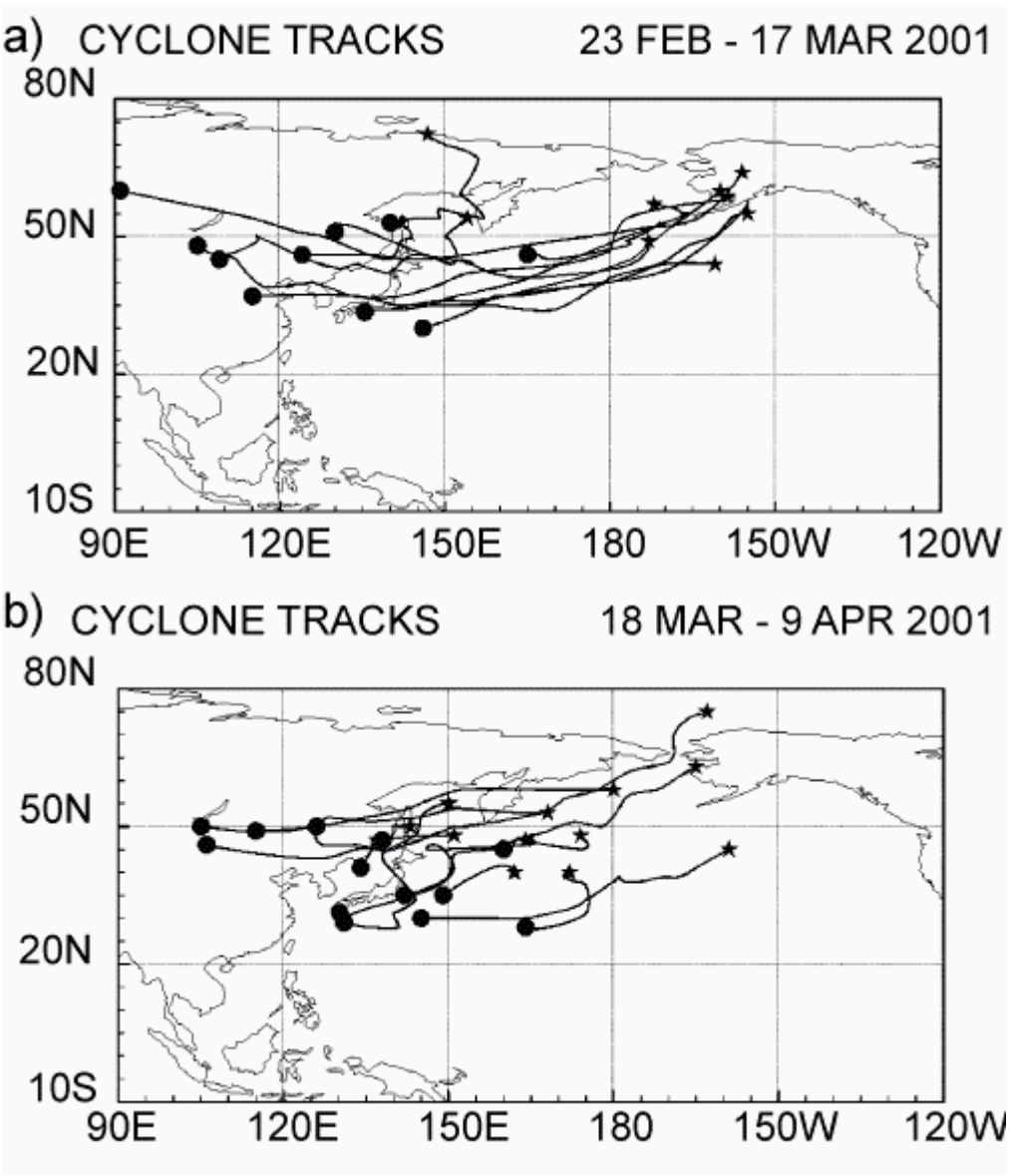

Figure 2. Tracks of cyclones affecting TRACE-P. Solid circles denote locations where the mean sea level pressure of a cyclone first became less than 1016 hPa, while stars denote the last location of this pressure. Results for the two halves of TRACE-P are shown.

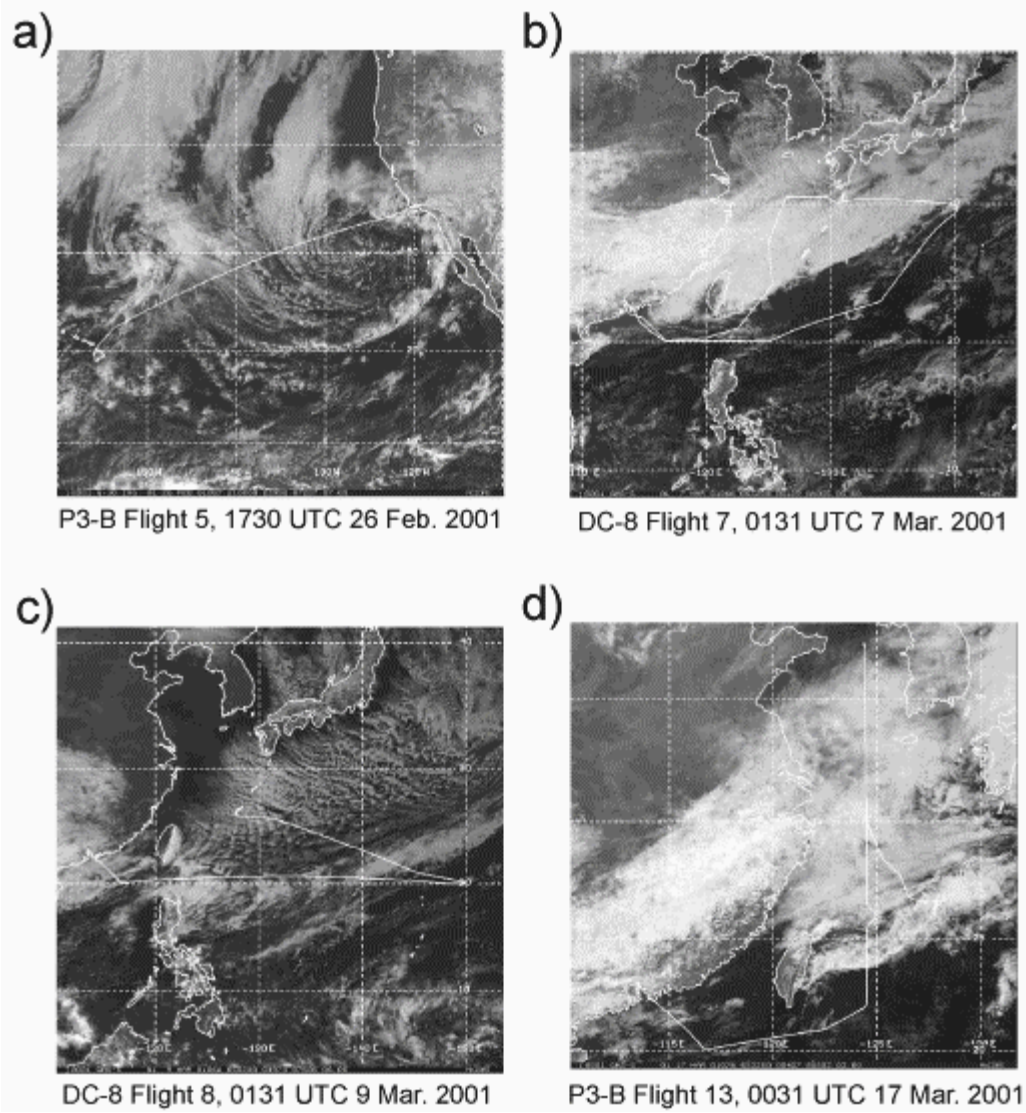

Figure 3. Visible imagery from the GMS satellite on selected days when TRACE-P flights intersected frontal cloud bands during the first half of the period. Flight tracks are indicated on the images.

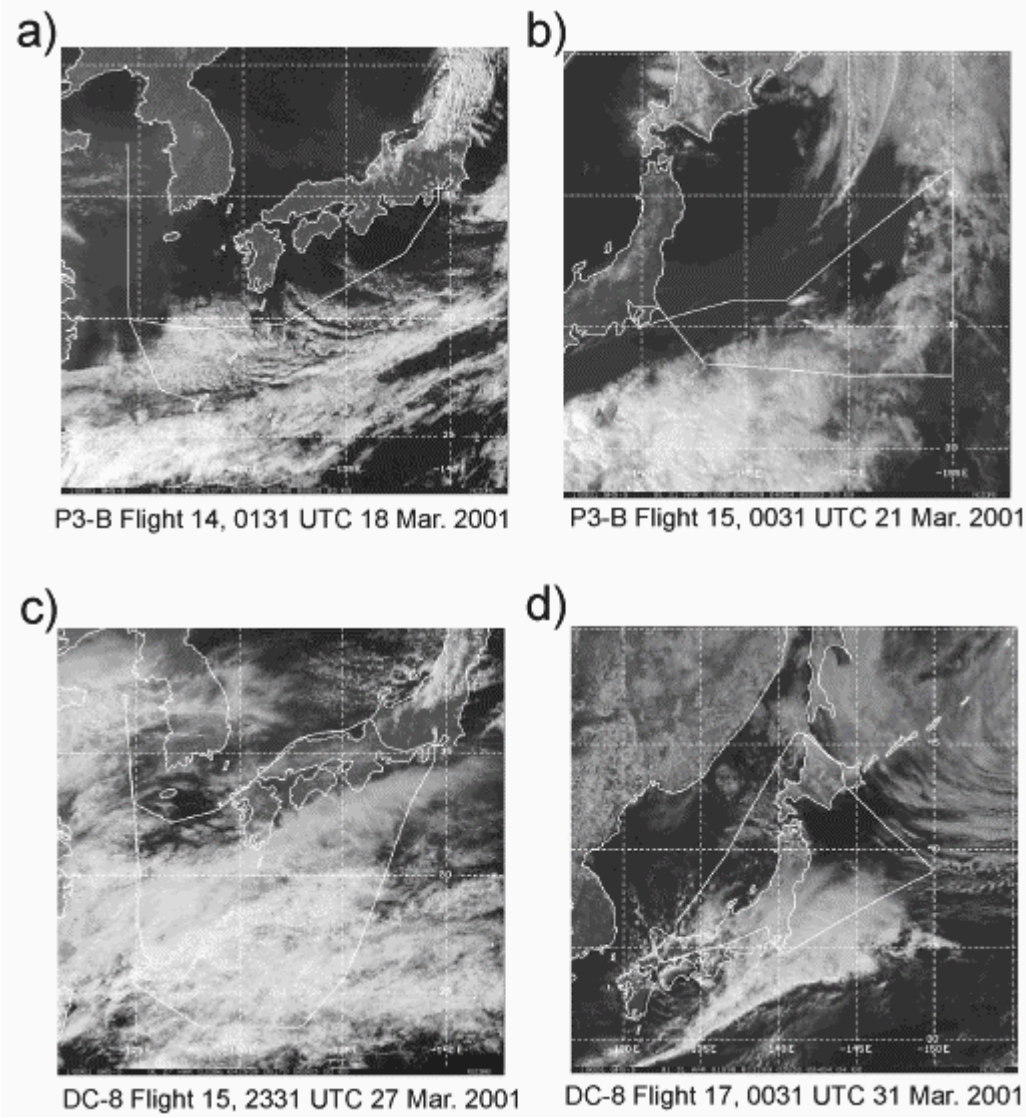

Figure 4. Visible imagery from the GMS satellite on selected days when TRACE-P flights intersected frontal cloud bands during the second half of the period. Flight tracks are indicated on the images.

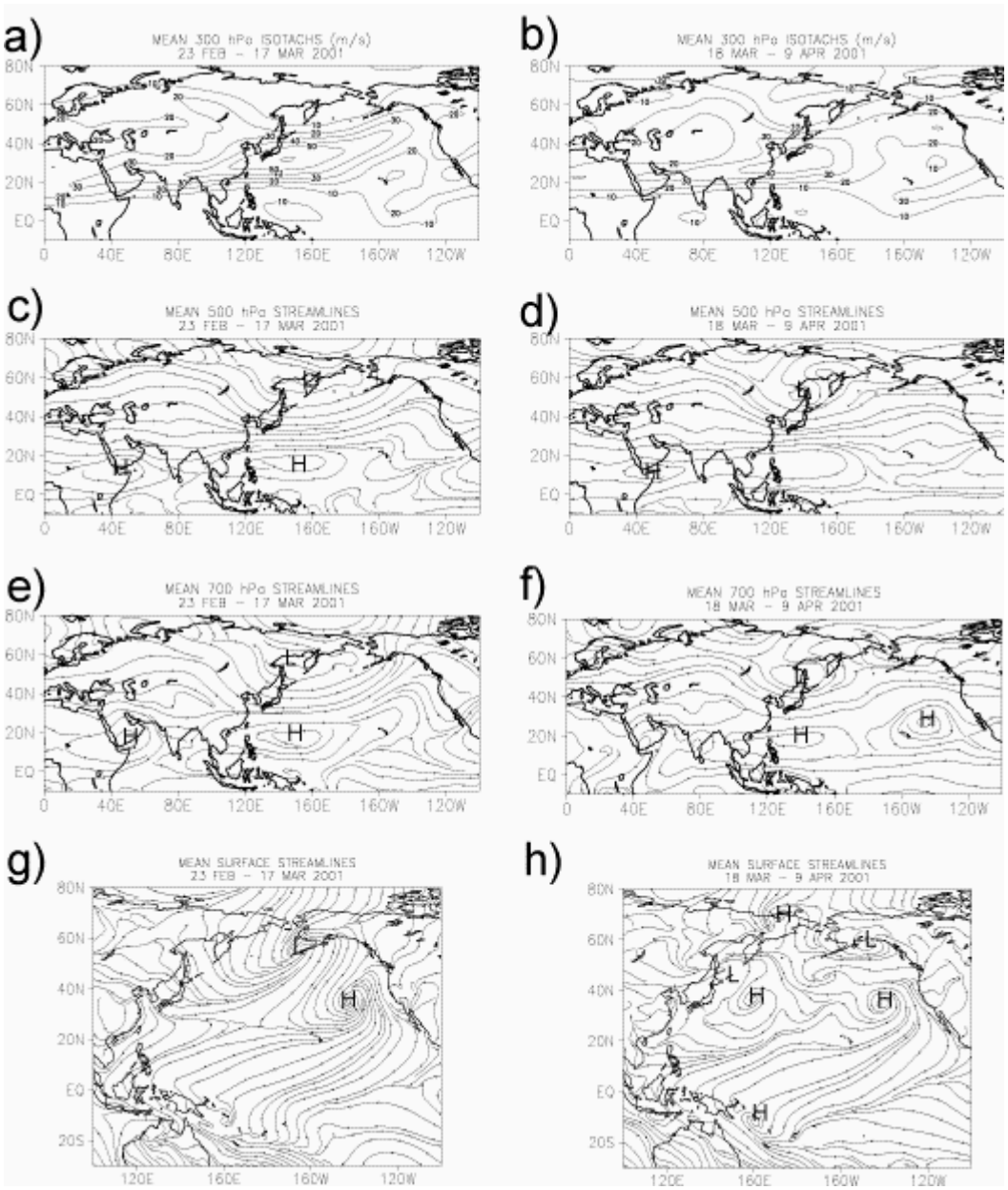

Figure 5. (a-b) Mean isotachs at 300 hPa during the two halves of TRACE-P. (c-h) Mean streamlines at the surface, 700 hPa, and 500 hPa during the two halves of TRACE-P. Major cyclonic and anticyclonic circulation centers are labeled "L" and "H", respectively.

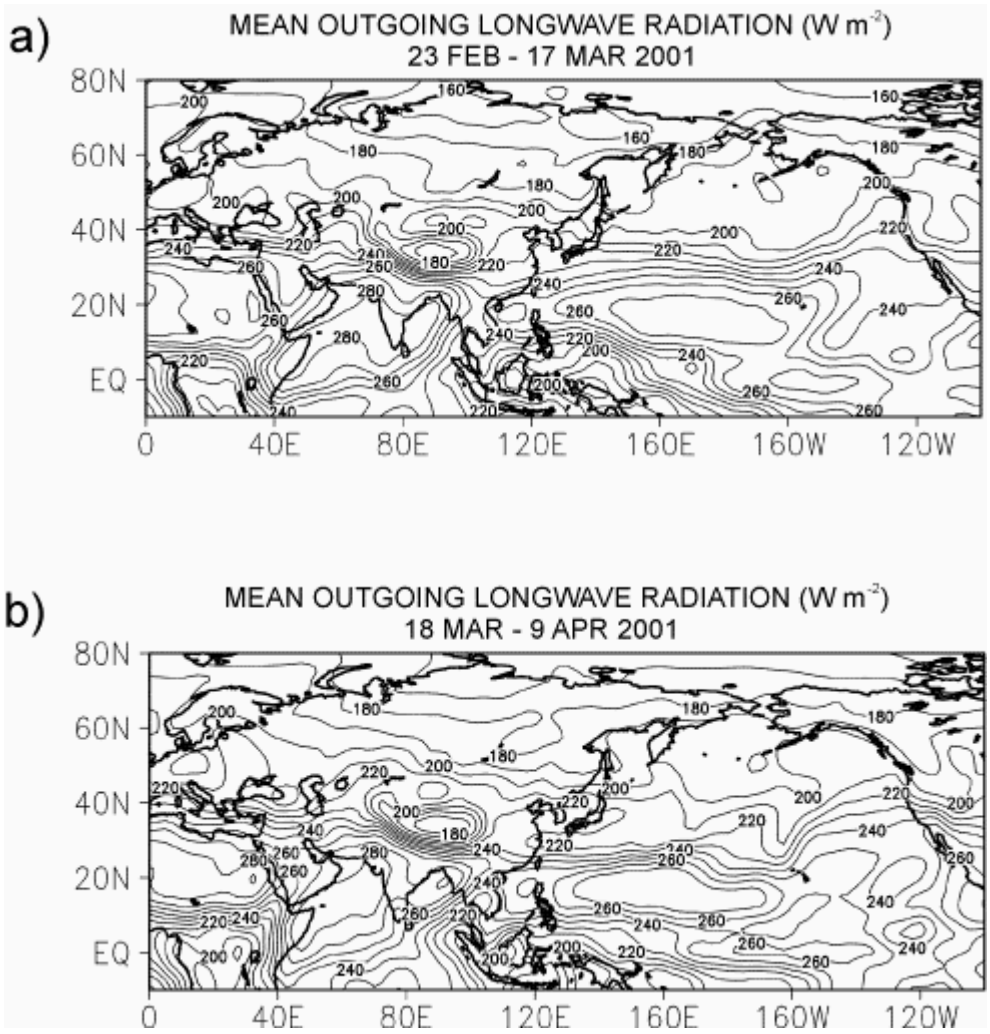

Figure 6. Mean outgoing longwave radiation (W m $^{-2}$) during the two halves of TRACE-P.

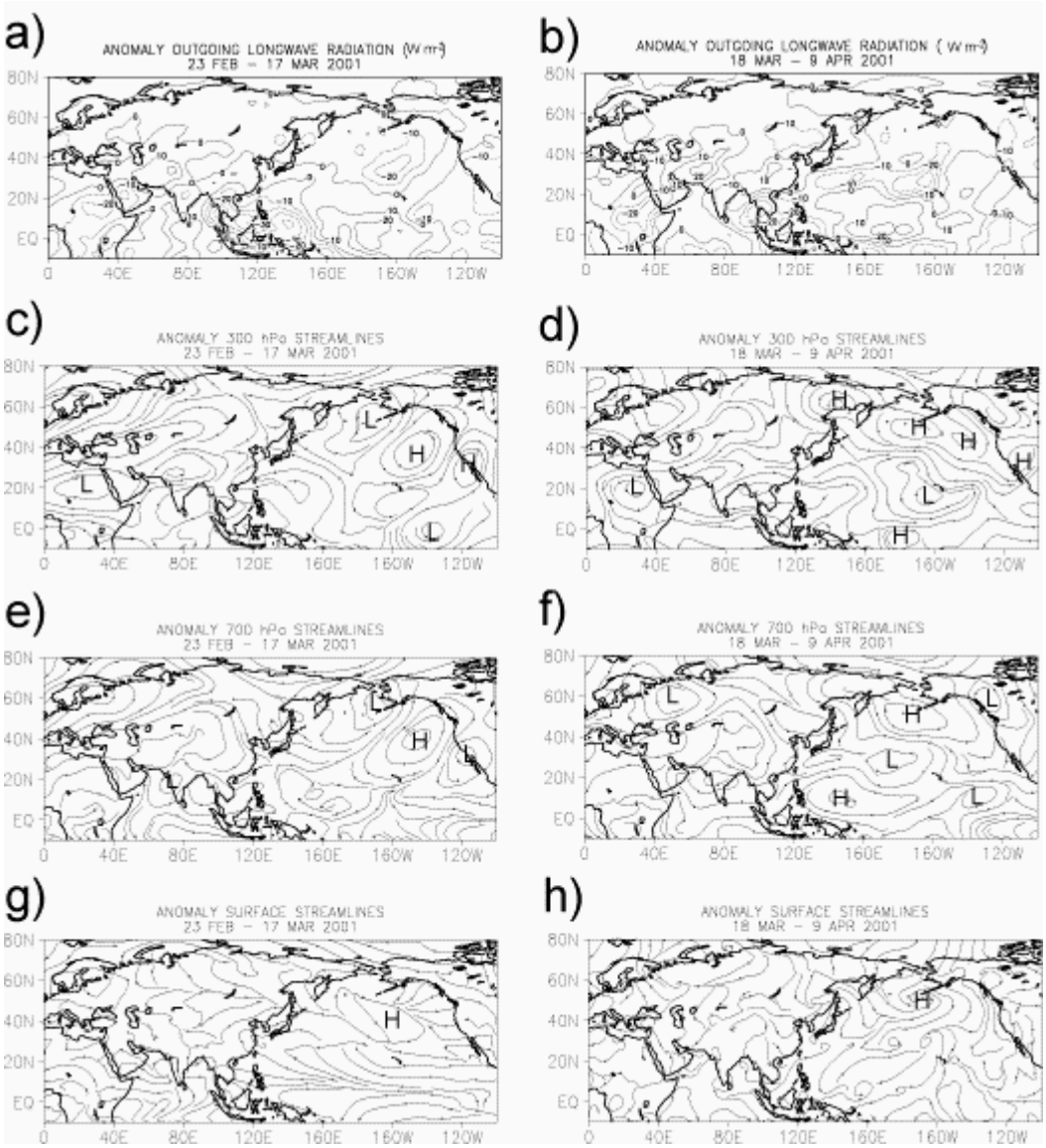

Figure 7. (a-b) Departure of outgoing longwave radiation (W m $^{-2}$) during the two halves of TRACE-P from their respective long term climatological means. (c-h) Streamlines of the vector departure of winds during the two halves of TRACE-P from their respective long term climatological means. Cyclonic and anticyclonic anomalies are indicated by "L" and "H", respectively.

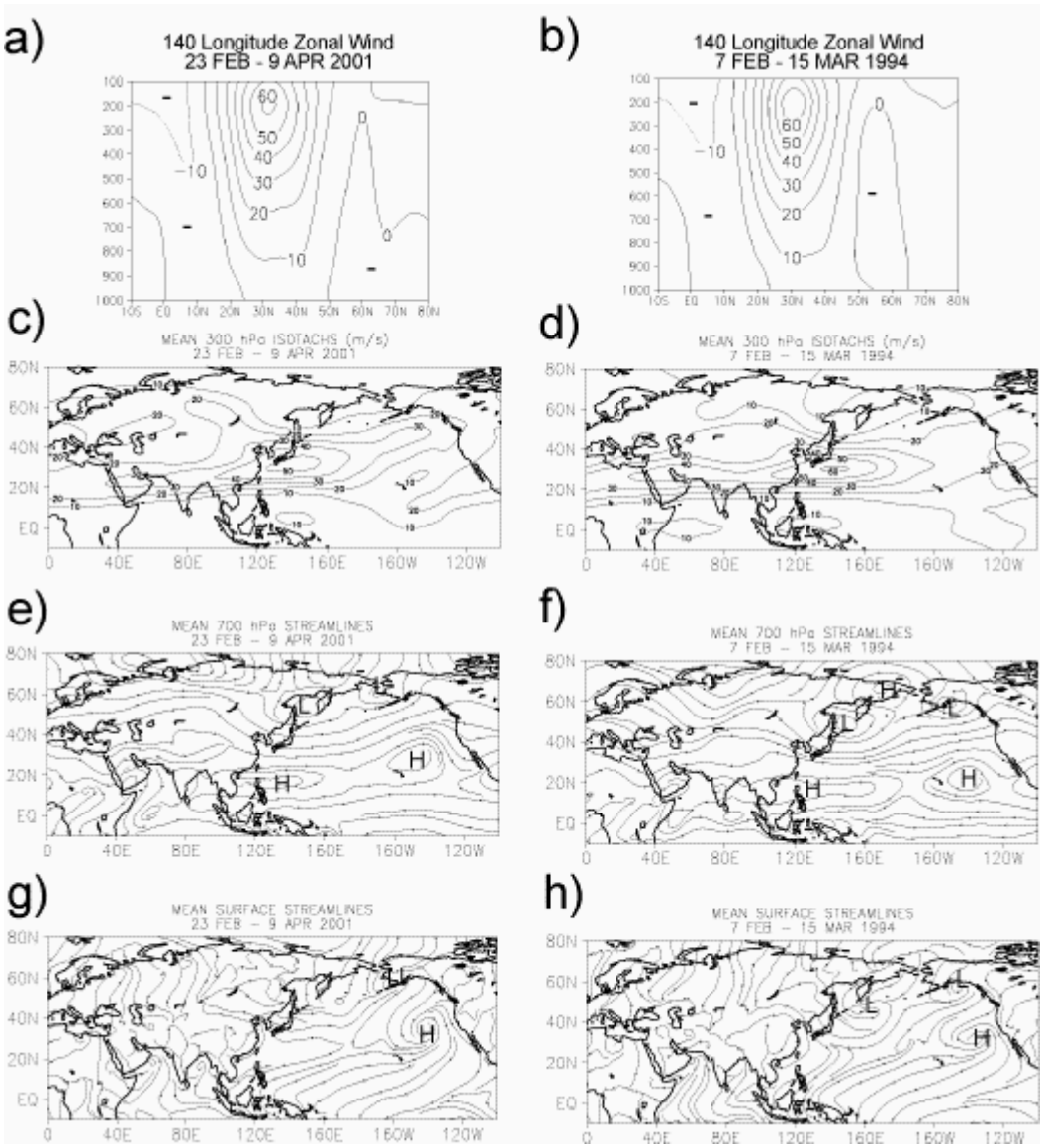

Figure 8. (a-b) Latitude-height cross section of the zonal wind (m s $^{-1}$) along 140 ^{o} E longitude during the TRACE-P and PEM WEST-B missions. (c-d) Mean isotachs at 300 hPa during the TRACE-P and PEM WEST-B missions. (e-h) Mean streamlines at the surface and 700 hPa during the TRACE-P and PEM WEST-B missions. Major cyclonic and anticyclonic circulation centers are labeled "L" and "H", respectively.

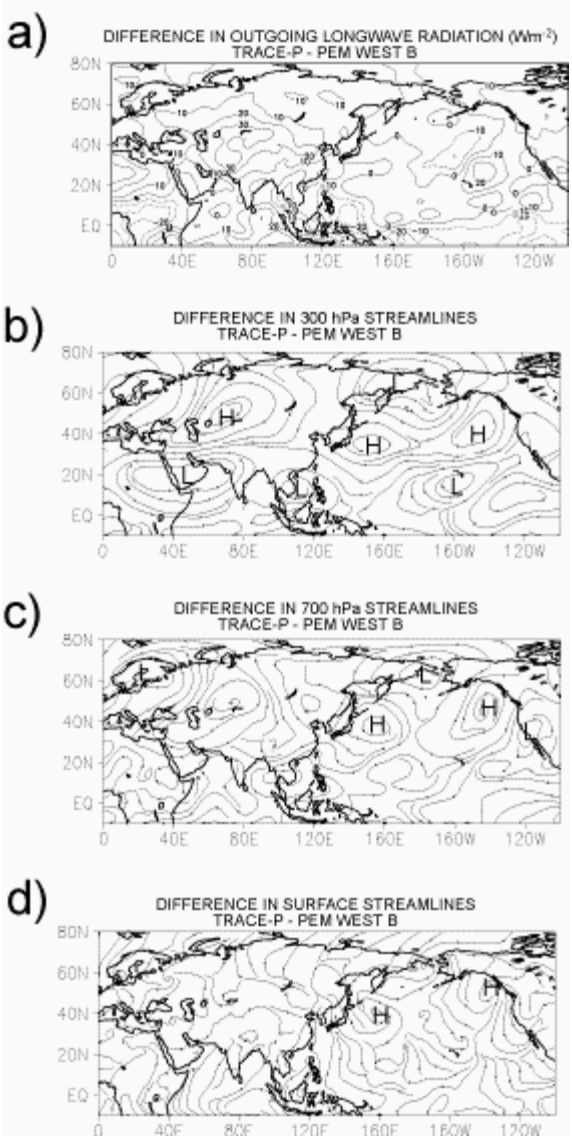

Figure 9. (a) Difference in outgoing long wave radiation (W m $^{-2}$) between the TRACE-P and PEM WEST-B missions. (b-d) Streamlines of the vector wind difference between the TRACE-P and PEM WEST-B missions at the surface, 700 hPa and 300 hPa.

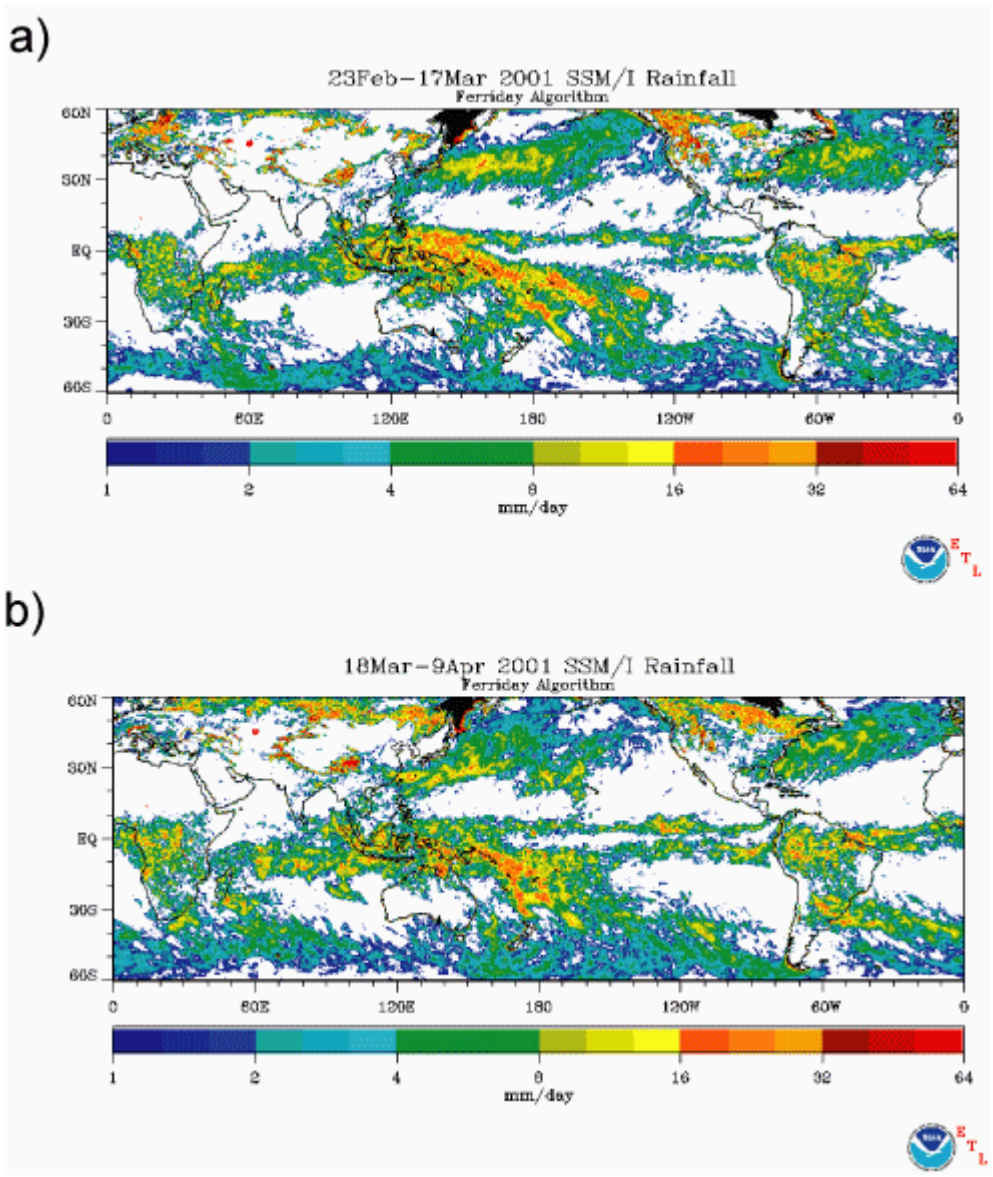

Plate 1. (a-b) Satellite-derived rainfall for the first and second halves of TRACE-P derived from the SSM/I instrument. Data provided by NOAA.

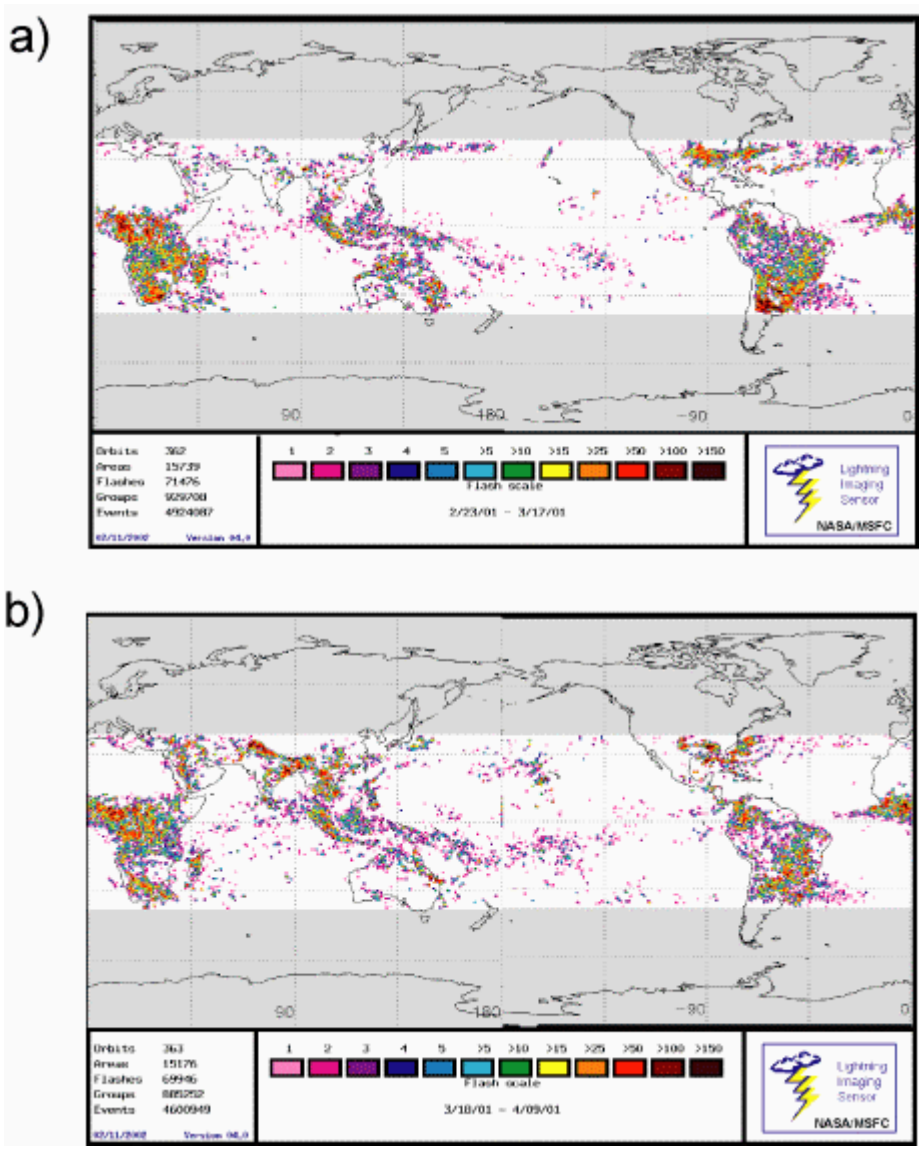

Plate 2. (a-b) Lightning data for the first and second halves of TRACE-P detected by the Lightning Imaging Sensor. Due to the nature of the satellite's orbit, the data are confined to ± 35 $_{o}$ latitude. Data provided by NASA Marshall Space Flight Center (http://thunder.msfc.nasa.gov/lis.html).

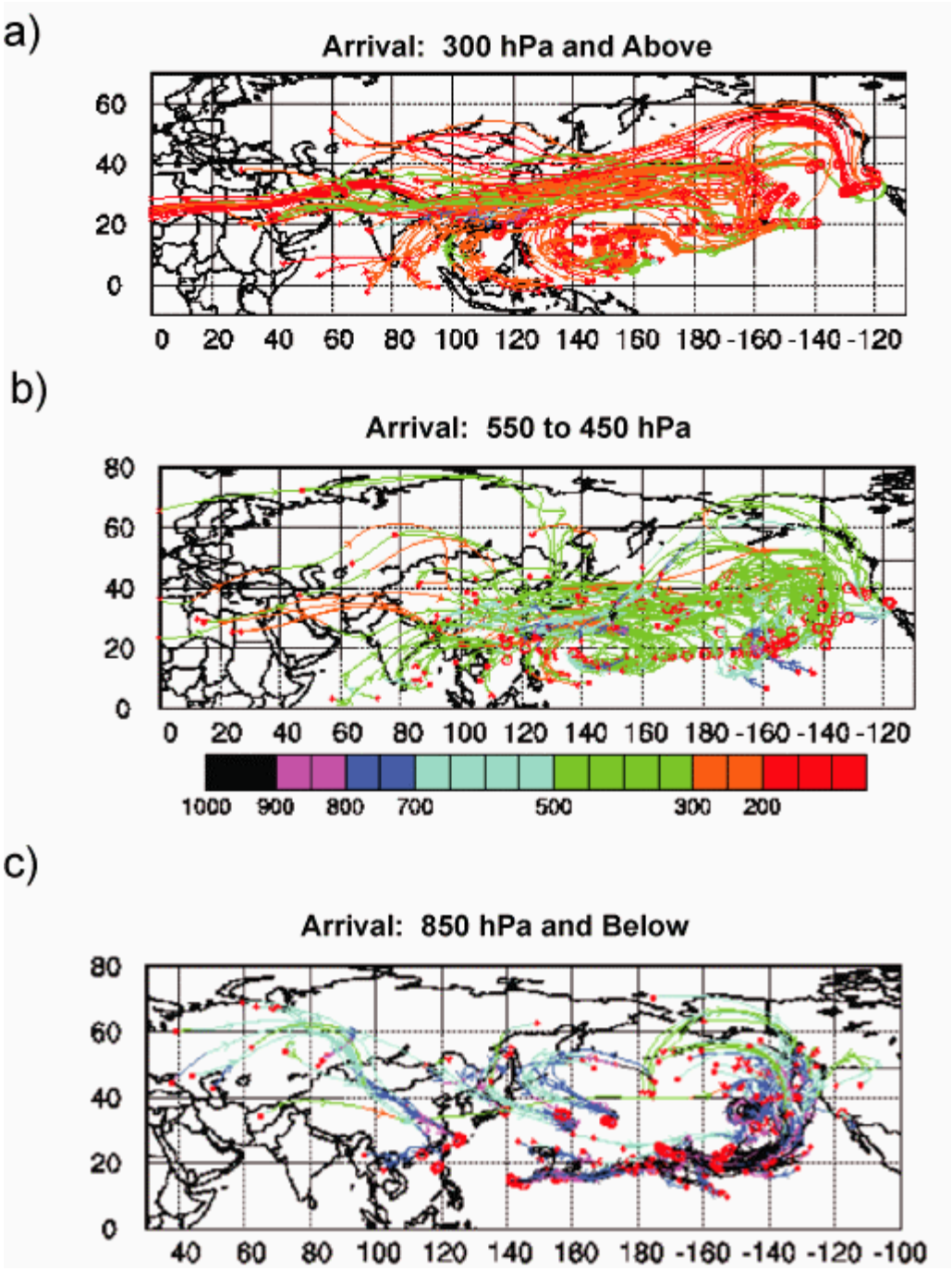

Plate 3. Five-day backward trajectories arriving at DC-8 aircraft locations along the eastbound and westbound transit flights of TRACE-P. (a) Trajectories arriving at aircraft pressure altitudes of 300 hPa or less, (b) Trajectories arriving at aircraft pressure altitudes between 550 and 450 hPa, and (c) Trajectories arriving at aircraft pressure altitudes of 850 hPa and greater. Trajectories within a given altitude category generally arrive at the aircraft tracks at intervals of 10 min. flight time. Trajectory altitudes are denoted by the color scale, while circles denote the aircraft arrival positions, and stars indicate locations five days earlier.

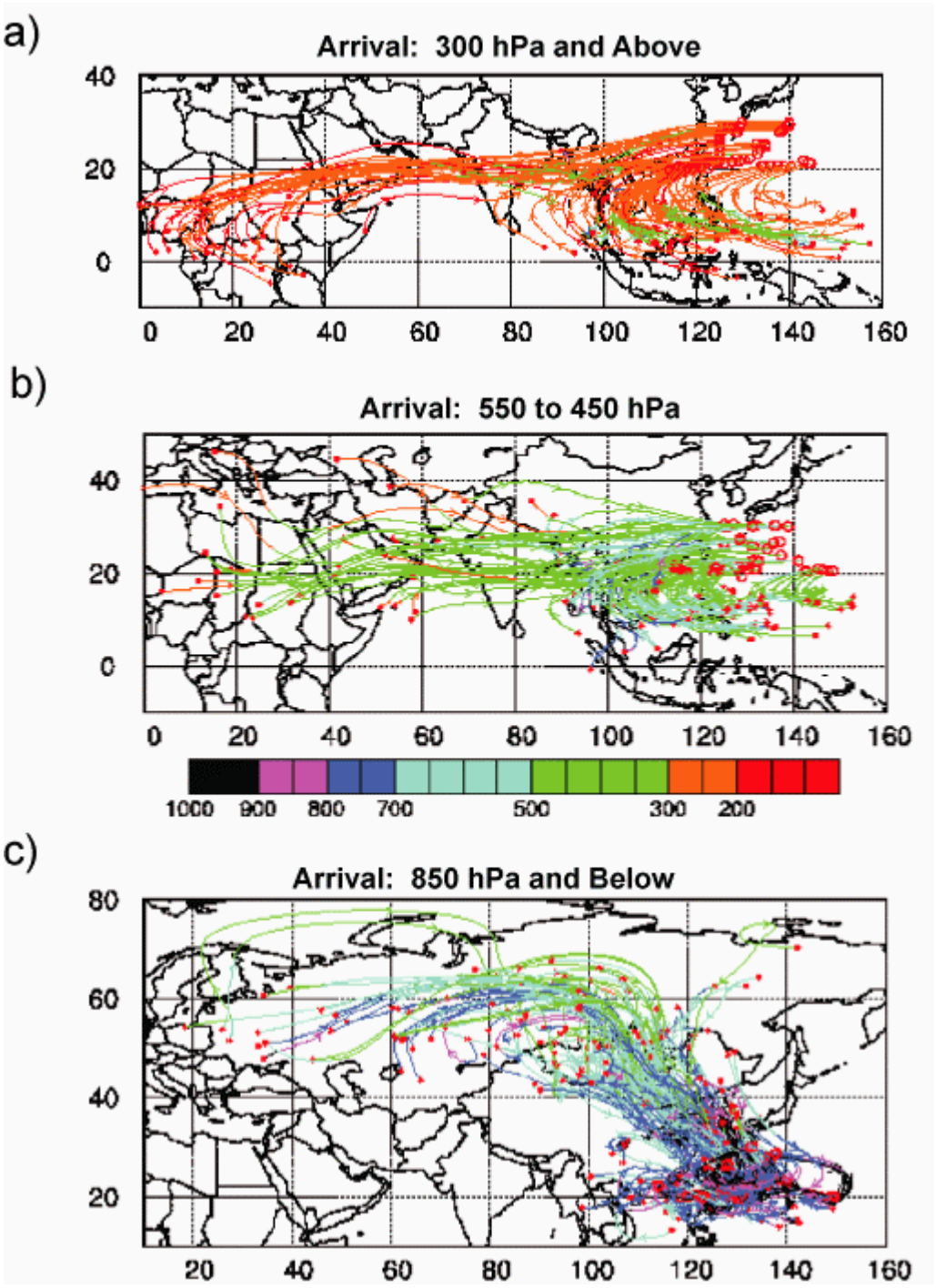

Plate 4. As in Plate 3, but for trajectories arriving at the DC-8 flights out of Hong Kong.

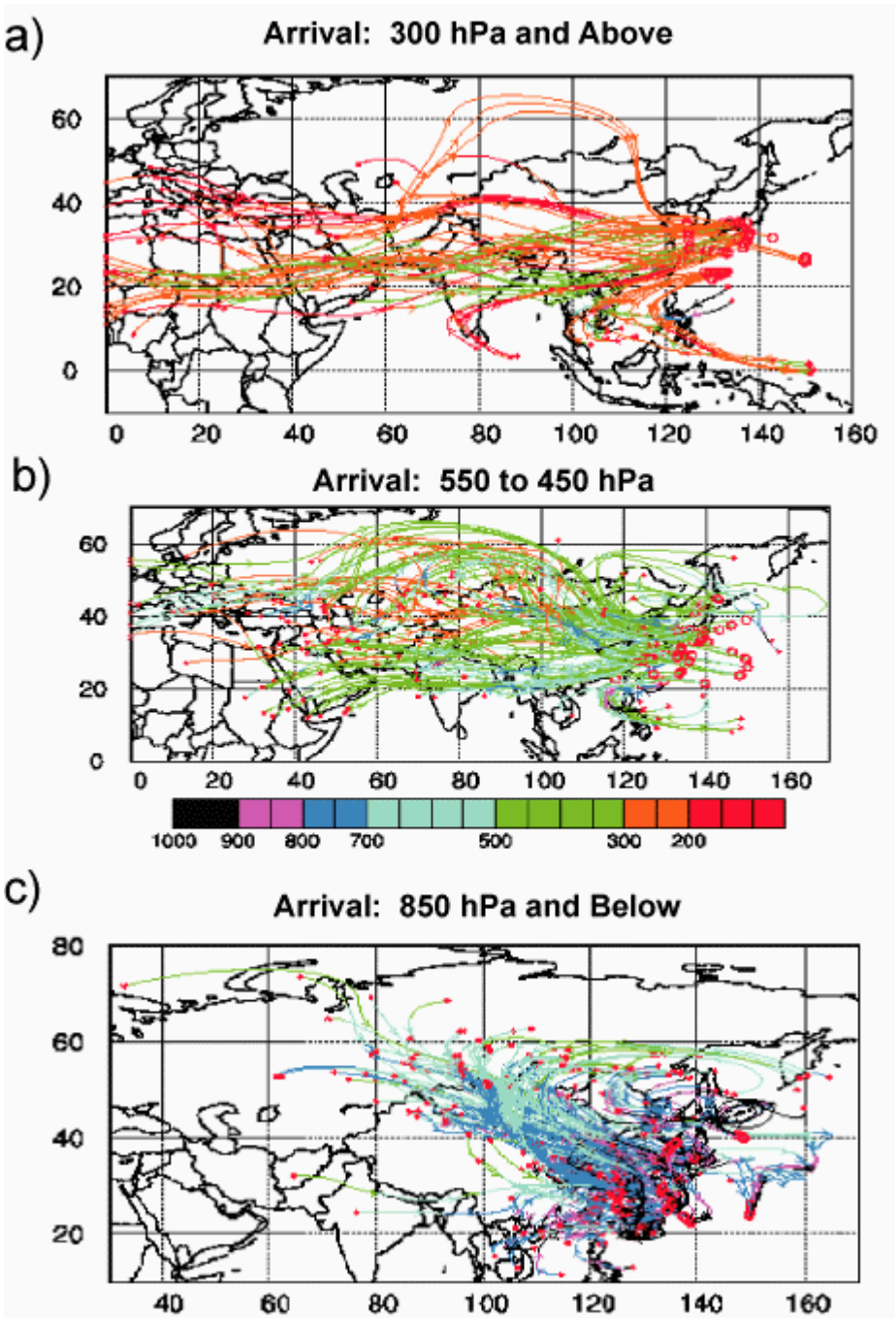

Plate 5. As in Plate 3, but for trajectories arriving at the DC-8 flights out of Yokota AB, Japan.